What is Claimed:

1. A spinnerette assembly for forming one or more composite hollow fibers comprising:

at least one extrusion orifice formed in said spinnerette assembly;

a hollow needle extending through each said extrusion orifice in a concentric manner to define an annular passage around said needle in said extrusion orifice;

a bore forming fluid passage communicating with the interior of each said needle;

at least one core forming material passage formed in said spinnerette assembly, wherein each said core forming material passage comprises a core forming material inlet port extending from a surface of said assembly to an interior of said assembly and at least one transverse passage extending from said core forming material port to each said annular passage; and

a sheath forming material passage, wherein said sheath forming material passage comprises a sheath forming material port extending from a surface of said spinnerette assembly to each said annular passage

2. A spinnerette assembly as recited in claim 1, wherein said transverse passage is a backcut portion of said core forming material passage that entirely surrounds said needle in a continuous manner and is in communication with said extrusion orifice.

3. A spinnerette assembly as recited in claim 1, wherein each said core forming material port extends substantially parallel to said extrusion orifice and said transverse passage extends substantially perpendicular to said core forming material port.

4. A spinnerette assembly as recited in claim 1, wherein said spinnerette assembly comprises a spinnerette body and a bottom plate separated from each other by a shim disposed between said spinnerette body and said bottom plate.

5. A spinnerette assembly as recited in claim 4, comprising at least one needle affixed in a needle mounting hole formed in said spinnerette body and receiving a portion of each said needle.

6. A spinnerette assembly as recited in claim 4 wherein each said needle mounting hole is in communication with a bore forming fluid inlet port at a surface of said spinnerette body via a bore forming fluid passage.

7. A spinnerette as recited in claim 6, wherein said bore forming fluid passage comprises a first bore forming fluid conduit coaxial with said needle and in communication with said needle and a second bore forming fluid conduit that extends at an angle with respect to said first bore forming fluid conduit from said bore forming fluid conduit to a surface of said spinnerette body.

8. A spinnerette assembly as recited in claim 4, wherein said extrusion orifice extends through portions of said spinnerette body and said bottom plate.

9. A spinnerette assembly as recited in claim 4, wherein said core forming material passage is formed in said spinnerette body.

10. A spinnerette assembly as recited in claim 4, wherein the gap between said spinnerette body and said bottom plate defines a portion of said sheath forming material passage.

11. A spinnerette assembly as recited in claim 10 wherein said sheath forming material passage further comprises a sheath forming material inlet port situated at an exterior surface of said spinnerette body in communication with a channel formed in said spinnerette body, said channel being in communication with the gap defined between said spinnerette body and said bottom plate.

12. A spinnerette assembly for forming one or more multiple-sheath composite hollow fibers comprising:

at least one extrusion orifice formed in said spinnerette assembly;

a hollow needle extending through each said extrusion orifice in a concentric manner to define an annular passage around said needle in said extrusion orifice;

a bore forming fluid passage communicating with the interior of each said needle;

at least one core forming material passage formed in said spinnerette assembly, wherein each said core forming material passage comprises a core forming material inlet port extending from a surface of said assembly to an interior of said assembly and at least one transverse passage extending from said core forming material port to each said annular passage; and

a first sheath forming material passage, wherein said first sheath forming material passage comprises a first sheath forming material port extending from a surface of said spinnerette assembly to each said annular passage

a second sheath forming material passage, wherein said second sheath forming material passage comprises a second sheath forming material port extending from a surface of said spinnerette assembly to each said annular passage

13. A spinnerette assembly as recited in claim 12, wherein said transverse passage is a backcut portion of said core forming material passage that entirely surrounds said needle in a continuous manner and is in communication with said extrusion orifice.

14. A spinnerette assembly as recited in claim 12, wherein each said core forming material port extends substantially parallel to said extrusion orifice and said transverse passage extends substantially perpendicular to said core forming material port.

15. A spinnerette assembly as recited in claim 12, wherein said spinnerette assembly comprises a spinnerette body, a middle plate, and a bottom plate separated by a first shim disposed between said spinnerette body and said middle plate, and a second shim disposed between said middle plate and said bottom plate.

16. A spinnerette assembly as recited in claim 15, comprising at least one needle affixed in a needle mounting hole formed in said spinnerette body and receiving a portion of each said needle.

17. A spinnerette assembly as recited in claim 15 wherein each said needle mounting hole is in communication with a bore forming fluid inlet port at a surface of said spinnerette body via a bore forming fluid passage.

18. A spinnerette as recited in claim 17, wherein said bore forming fluid passage comprises a first bore forming fluid conduit coaxial with said needle and in communication with said needle and a second bore forming fluid conduit that extends at an angle with respect to said first bore forming fluid conduit from said bore forming fluid conduit to a surface of said spinnerette body.

19. A spinnerette assembly as recited in claim 15, wherein said extrusion orifice extends through portions of said spinnerette body, said middle plate, and said bottom plate.

20. A spinnerette assembly as recited in claim 15, wherein said core forming material passage is formed in said spinnerette body.

21. A spinnerette assembly as recited in claim 15, wherein the gap between said spinnerette body and said middle plate defines a portion of said first sheath forming material passage, and the gap between said middle plate and said bottom plate defines a portion of said second sheath forming material passage.

22. A spinnerette assembly as recited in claim 21 wherein said first sheath forming material passage comprises a first sheath forming material inlet port situated at an exterior surface of said spinnerette body in communication with a channel formed in said spinnerette body, said channel being in communication with the gap defined between said spinnerette body and said middle plate.

23 . A spinnerette assembly as recited in claim 21 wherein said second sheath forming material passage comprises a second sheath forming material inlet port situated at an exterior surface of said bottom plate in communication with a channel formed in said bottom plate, said channel being in communication with the gap defined between said bottom plate and said middle plate.

24. A spinnerette assembly as recited in claims 1 and 12 comprising multiple transverse passages and extrusion orifices for each core forming material port.

25. A method for forming a composite hollow fiber comprising the steps of:

delivering a core forming material to each annular passage in a spinnerette assembly, said core forming material entering said spinnerette assembly through one or more core forming material inlet ports and passing through the interior of said assembly to a transverse passage, a portion of said transverse passage

entirely surrounding each needle in a continuous manner, and through an annular passage in communication with an extrusion orifice;

delivering at least one sheath forming material concentrically around the core forming material as it traverses through each said annular passage;

extruding the layered core forming material and at least one sheath forming material through the extrusion orifice and around each said needle, injecting a bore forming fluid into each needle to thereby provide a layered composite fiber comprising a bore forming fluid, a core forming material, and a sheath forming material as it exits the spinnerette assembly through the extrusion orifice;

optionally passing the nascent extruded hollow fiber through an air gap; and

solidifying the hollow fiber by cooling, solvent evaporation, or solvent extraction.